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PATENT  
Attorney Docket No. JACOB100/F7-5537

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

James D. Jacobson

Serial No.: 09/457,173

Filed: December 8, 1999

Group Art No.: 1723

Examiner: Sun U. Kim

For: MICROPOROUS FILTER MEMBRANE,  
METHOD OF MAKING MICROPOROUS  
FILTER MEMBRANE AND SEPARATOR  
EMPLOYING MICROPOROUS FILTER  
MEMBRANES

Commissioner for Patents  
U.S. Patent & Trademark Office  
Washington, D.C. 20231

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1. Response to Office Action of August 7, 2002 (in duplicate, 18 sheets total);
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D.C. 20231

Name: Jeannie Rapstad

Signature: *Jeannie Rapstad*

Assistant Commission for Patents  
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Washington DC 20231

RESPONSE TO OFFICE ACTION OF AUGUST 9, 2002

This is in response to the Office Action of August 9, 2002.

In the above-identified Office Action, all of the pending  
(and not withdrawn) claims, i.e., Claims 14-30, 102, and 105,  
were rejected under 35 U.S.C. § 103(a) based on one or more  
combinations of U.S. Patents No. 5,733,041 to Van Rijn;  
5,275,725 to Ishii; 6,264,044 to Meyering; and 5,807,406 to  
Brauker.

As set forth in more detail below, it is respectfully submitted that the claimed subject matter would not have been obvious to a person of ordinary skill having knowledge of the cited references.

The '041 Van Rijn, '725 Ishii and '406 Brauker patents have been cited in earlier Office Actions and discussed at some length in the responses thereto. In the present Office Action, the Examiner has cited the additional '044 patent to Meyering as disclosing a "monolithic" membrane as set forth in the pending claims.

#### THE MEYERING '044 PATENT

Applicant acknowledges that the Meyering '044 patent uses the term "monolithic." However, as will be set forth in more detail below, the "monolithic" membrane of the Meyering '044 patent is quite different from that set forth in the pending claims, and there is no disclosure or suggestion as to how the teaching of Meyering could or should be combined with the other cited references to reach the claimed subject matter.

Except for its use of the term "monolithic," in a manner different than used in the present application, the teaching of the Meyering patent is comparable to that of the previously cited and discussed Ishii '725 patent. Ishii and Meyering both disclose random fiber or depth-filter type membranes in which

particles are captured in the interstices of material or in a labyrinth of fibers formed within the membrane. Both are intended to be used in operations requiring "back-washing" or "back-flushing," and need to be sturdy enough to withstand the back and forth flow through the filter membrane in such applications.

Neither the Meyering nor the Ishii patent is directed to a membrane having a filter layer that includes micron scale "precision shaped pores" and a "precision shaped porous support structure for the filter layer." It is quite clear that neither Ishii nor Meyering shows or suggests how one would make, assemble or create a membrane or filter having precision shaped pores and precision shaped support structure.

Figure 2 of the '044 Meyering patent shows how the filter membrane described therein is formed - with doping materials 26, 28 and 36 impregnated into a support material 12 (See Col. 11, line 5 - Col. 12, line 3). The resultant membrane is a random fiber or depth filter type membrane, employing tortuous pathways or interstices in which particles are trapped during filtration. Such a filter does not use precision shaped pores, but employs what may be referred to as a "nominal" pore size, which is the consequence of the filter structure, how it is made and how it functions. This type of filtration structure with a maze of

random passageways is readily seen in Figures 5a-5h of the '044 Meyering patent.

This type of filter construction is fundamentally different from the precision shaped pore arrangement and precision shaped support structure set forth in the pending claims. It is respectfully submitted that one of ordinary skill in the filtration field would not view the filter structures or teaching of the '044 Meyering or '725 Ishii patents as being helpful, instructive or relevant to the claimed precision pore membrane of the present invention -- which employs an entirely different filtration principle, and presents entirely different fabrication and processing issues.

In addition, although the Meyering '044 patent admittedly uses the word "monolithic," it does so in a much different context and for a different purpose than set forth in the pending claims. As identified in the Meyering patent, "monolithic" means a single unit. With that definition, the Ishii '725 patent also discloses the "monolithic" membrane. That, however, is not a monolithic membrane as set forth in the pending claims.

As set forth in the present application, the monolithic filter membrane comprises a polymeric filter layer having micron-scale precision shaped pores and a support layer

including a precision shaped porous support structure for the filter layer in which there is no readily discernible line of distinction between the filter layer and the support layer. Whereas "monolithic" as used in the '044 Meyering patent refers to the resulting (depth-filter type) membrane being a single unit, "monolithic" as defined in the pending application refers to that characteristic of the claimed membrane in which there is no readily visible line of distinction between the micron-scale precision shaped pore filter layer and the precision shaped porous support structure for the filter layer.

It is respectfully submitted that no one skilled in the art following the teaching of the '044 Meyering patent or the '725 Ishii patent could even make a filter of the claimed invention, because the teachings of the '044 Meyering and '725 Ishii patents are directed to a fundamentally different kind of filter structure. Although each of the '044 Meyering and '725 Ishii patents results in a filter membrane that is a single unit, it is not a monolithic membrane as set forth in the pending claims and does not teach or suggest such a membrane.

**THERE IS NO SUGGESTION FOR COMBINING THE TEACHING OF MEYERING OR  
ISHII WITH THE '014 VAN RIJN PATENT, EITHER ALONE OR IN  
COMBINATION WITH THE '406 BRAUKER PATENT AS SET FORTH IN  
PARAGRAPHS 2-3 OF THE OFFICE ACTION.**

As set forth above, the '044 Meyering and the '725 Ishii patents are directed to filter structures that are fundamentally different than the claimed membrane and based on a different filtration principle. Fashioning the filter membranes of Meyering and Ishii requires entirely different methodology than disclosed in the pending application.

With this in mind, it is respectfully submitted that the claimed subject matter of a monolithic polymeric filter membrane having a filter layer including micron-scale precision-shaped pores and a support layer including a precision-shaped porous structure for the filter layer would not have been obvious to someone skilled in the art based on a combination of Meyering or Ishii together with the Van Rijn '014 patent. Meyering and/or Ishii teaches nothing to one of ordinary skill as to how to make a filter structure of Van Rijn in a manner that will render the membrane and support monolithic as defined herein, i.e., having no readily discernible line of distinction between the layers.

As seen in Figure 2, the '044 Meyering patent discloses a process in which doping materials 26, 28 and 36 are layered onto and "impregnate" a support material 12 (See discussion at Col. 11, line 5 - Col. 12, line 3 of the Meyering patent). It is

respectfully submitted, however, that such a process has no reasonable combinability with the structure or process shown in the Van Rijn patent to reach the claimed invention. Impregnation of a support material with doping materials does not lead one toward the claimed invention but, indeed, away from it.

With all due respect, it is submitted that it is only with the knowledge of the claimed subject matter of the present invention, that the Examiner has the incentive to attempt to make the combination of the random fiber and depth filler teaching of Meyering and Ishii, with the very different Van Rijn structure in order to render the claimed subject matter obvious. However, as we know, and as the Federal Circuit has made clear, the present application may not be used a roadmap for the purpose of combining references that otherwise would not logically be combinable, particularly where there is no suggestion in either reference to make the claimed combination.

For these reasons Applicant continues respectfully to urge that the claimed subject matter is not disclosed or suggested by the cited Meyering, Ishii and Van Rijn patents, and that it would not have been obvious to a person of ordinary skill in light of the cited patents.



It is also respectfully submitted that the claimed subject matter would not have been obvious in view of a combination of Van Rijn, Meyering or Ishii and Brauker. Brauker is directed to a structure for promoting tissue growth. This is an entirely different structure, function and purpose than the claimed subject matter.

To make the claimed invention, according to the Examiner, one of ordinary skill would have to employ certain structural elements of Van Rijn, in combination with teaching based on the entirely different filtration and fabrication technology shown in Meyering and Ishii, as supplemented by techniques shown in Brauker for forming a tissue growth structure. Such a combination of various elements from three or more very distinct patents is inherently improbable.

It is therefore respectfully submitted that the claimed subject matter is not disclosed or suggested by the prior art, either as previously discussed or in combination with the newly cited Meyering '044 patent. For these reasons it is respectfully requested that the above-application be reconsidered, and that the claims be allowed.

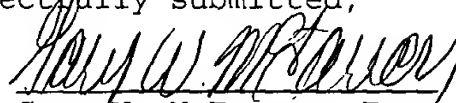
It is believed that no fee is necessary in connection with this Response. However, if it is determined that fees are

required, please charge Deposit Account No. 50-1039. (A  
duplicate of this document is enclosed.)

Respectfully submitted,

Date: November 12, 2002

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